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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/669,178  | 09/23/2003  | Farrokh Avazi        | 062020-1450         | 4090             |
| 24504   | 7590        | 05/13/2005           | EXAMINER            |                  |
| THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP<br>100 GALLERIA PARKWAY, NW<br>STE 1750<br>ATLANTA, GA 30339-5948 |             |                      | TAKAOKA, DEAN O     |                  |
|   |             | ART UNIT             |                     | PAPER NUMBER     |
|   |             |                      |                     | 2817             |

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/669,178             | AVAZI ET AL.        |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Dean O. Takaoka        | 2817                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 April 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6 and 8-18 is/are rejected.
- 7) Claim(s) 7 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 13 April 2005 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 6, 8, 9, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. Patent No. 5,839,062), Applicant's prior art submitted in the IDS dated June 25, 2004 for reasons of record contained in the Office action dated January 5, 2005.

Claim 1:

Claim 1 deletes the word [[and]] and adds the word to.

It is the position of the Examiner the prior art of Nguyen continues to anticipate the newly added limitation thus the rejection is maintained.

Claims 2, 5, 6, 8, 9, 12 and 13:

The claims have not been amended and the prior art of Nguyen et al. continues to anticipate the newly added limitation thus the rejection is maintained.

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Claims 1, 2, 4, 8, 9, 11, and 14 – 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. Patent No. 6,424,074) for reasons of record contained in the Office action dated January 5, 2005. Additionally, newly added claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al.

Claim 1:

Claim 1 deletes the word [[and]] and adds the word to.

It is the position of the Examiner the prior art of Nguyen et al. continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 2, 4, 8, 9, 11, and 14 – 16:

The claims have not been amended and the prior art of Nguyen et al. continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 17:

Providing a coupling capacitor element between the first MEMS resonator and the second MEMS resonator (where spring coupler 19 is a capacitive element shown in Fig. 5b).

Claim 18:

Wherein the first MEMS resonator and the second MEMS resonator are electrically coupled with the coupling element disposed between the first MEMS resonator and the second MEMS resonator (where spring coupler 19 is a capacitive element shown in Fig. 5b).

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Claims 1, 2, 4, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Zurn (U.S. Patent No. 6,621,134) for reasons of record contained in the Office action dated January 5, 2005. Additionally, newly added claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Zurn.

Claim 1:

Claim 1 deletes the word [[and]] and adds the word to.

It is the position of the Examiner the prior art of Zurn continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 2, 4, 8, 9, 11 and 14:

The claims have not been amended and the prior art of Zurn continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 17:

Providing a coupling capacitor element between the first MEMS resonator and the second MEMS resonator (where spring coupler 256 is a capacitive element shown in Fig. 16).

Claim 18:

Wherein the first MEMS resonator and the second MEMS resonator are electrically coupled with the coupling element disposed between the first MEMS resonator and the second MEMS resonator (where spring coupler 256 is a capacitive element shown in Fig. 16).

Claims 1, 2, 4, 8, 9, 11, 14 – 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (U.S. Patent No. 6,535,766) for reasons of record contained in the Office action dated January 5, 2005. Additionally, newly added claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Thompson et al.

Claim 1:

Claim 1 deletes the word [[and]] and adds the word to.

It is the position of the Examiner the prior art of Thompson et al. continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 2, 4, 8, 9, 11, 14 – 16:

The claims have not been amended and the prior art of Thompson et al. continues to anticipate the newly added limitation thus the rejection is maintained.

Claim 17:

Providing a coupling capacitor element between the first MEMS resonator and the second MEMS resonator (where spring coupler 56 is a capacitive element shown in Fig. 5b).

Claim 18:

Wherein the first MEMS resonator and the second MEMS resonator are electrically coupled with the coupling element disposed between the first MEMS resonator and the second MEMS resonator (where spring coupler 56 is a capacitive element shown in Fig. 5b).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zurn (U.S. Patent No. 6,621,134) or Thompson et al. (U.S. Patent No. 6,535,766) in view of Johnson (U.S. Patent No. 3,858,127) for reasons of record contained in the Office action dated January 5, 2005.

The claims have not been amended and the prior art of Zurn or Thompson et al. in view of Johnson continues to anticipate the newly added limitation thus the rejection/s is/are maintained.

### ***Response to Arguments***

Applicant's arguments filed September 23, 2003 have been fully considered but they are not persuasive.

#### **Claim rejection under 35 USC 102:**

**Nguyen et al. (U.S. Patent No. 5,839,062):**

Claims 1, 2, 5, 6, 8, 9, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. Patent No. 5,839,062).

Claim 1:

Applicant submits that "Nguyen does not disclose the emphasized claim features" where "Mechanical coupling is not the same as "***electrically coupling the***

*first MEMS resonator to the second MEMS resonator.””), which the Examiner disagrees.*

Applicant agrees Nguyen provides coupling between the two MEMS resonators via a spring coupler where Nguyen clearly shows coupling (albeit via a mechanical spring), where the term “electrical coupling” is broad which may encompass “mechanical coupling” which the Applicant agrees Nguyen shows, thus the rejection is maintained.

Claim 8:

As discussed in the reasons for rejection of claim 1 above, Nguyen clearly shows coupling (albeit via a mechanical spring) where the term “electrical coupling” is broad which may encompass “mechanical coupling” which the Applicant agrees Nguyen shows, thus the rejection is maintained.

**Nguyen et al. (U.S. Patent No. 6,424,074):**

Claims 1, 2, 4, 8, 9, 11, 14 – 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (U.S. Patent No. 6,424,074).

Applicant has identified this prior art reference as (Nguyen, USPN 5,424,074) which is believed to be a typographical error and should be (Nguyen, USPN 6,424,074), rejection of record, which is addressed by the Examiner as follows;

Claim 1:

Applicant submits that “Nguyen does not disclose “*electrically coupling the first MEMS resonator to the second MEMS resonator.”*”, where the Applicant

submits "Mechanical coupling is not the same as "**electrically coupling the first MEMS resonator to the second MEMS resonator**""", which the Examiner disagrees.

Applicant agrees Nguyen provides coupling between the two MEMS resonators via a spring coupler where Nguyen clearly shows coupling (albeit via a mechanical spring), where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Nguyen shows, thus the rejection is maintained.

Claim 8:

As discussed in the reasons for rejection of claim 1 above, Nguyen clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Nguyen shows, thus the rejection is maintained.

Claim 14:

As discussed in the reasons for rejection of claims 1 and 8 above, Nguyen clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Nguyen shows, thus the rejection is maintained.

**Zurn (U.S. Patent No. 6,621,134):**

Claims 1, 2, 4, 8, 9, 11, 14, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Zurn (U.S. Patent No. 6,621,134).

Claim 1:

Applicant submits that "Zurn does not disclose "***electrically coupling the first MEMS resonator to the second MEMS resonator.***"", where the Applicant submits "Mechanical coupling is not the same as "***electrically coupling the first MEMS resonator to the second MEMS resonator.***"", which the Examiner disagrees.

Applicant agrees Zurn provides coupling between the two MEMS resonators via a spring coupler where Zurn clearly shows coupling (albeit via a mechanical spring), where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Zurn shows, thus the rejection is maintained.

Claim 8:

As discussed in the reasons for rejection of claim 1 above, Zurn clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Zurn shows, thus the rejection is maintained.

Claim 14:

As discussed in the reasons for rejection of claims 1 and 8 above, Zurn clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Zurn shows, thus the rejection is maintained.

**Thompson et al. (Patent No. 6,535,766):**

Claims 1, 2, 4, 8, 9, 11, 14, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (U.S. Patent No. 6,535,766).

Claim 1:

Applicant submits that "Thompson does not disclose "***electrically coupling the first MEMS resonator to the second MEMS resonator.***"", where the Applicant submits "Mechanical coupling is not the same as "***electrically coupling the first MEMS resonator to the second MEMS resonator.***"", which the Examiner disagrees.

Applicant agrees Thompson provides coupling between the two MEMS resonators via a spring coupler where Thompson clearly shows coupling (albeit via a mechanical spring), where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Thompson shows, thus the rejection is maintained.

Claim 8:

As discussed in the reasons for rejection of claim 1 above, Thompson clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Thompson shows, thus the rejection is maintained.

Claim 14:

As discussed in the reasons for rejection of claims 1 and 8 above, Thompson clearly shows coupling (albeit via a mechanical spring) where the term "electrical coupling" is broad which may encompass "mechanical coupling" which the Applicant agrees Thompson shows, thus the rejection is maintained.

**Claim rejection under 35 USC 103:**

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zurn or Thompson et al. in view of Johnson (U.S. Patent No. 3,858,127).

Applicant submits “neither Zurn nor Thompson discloses the explicit claim features of independent claims 1, 8, and 14” which the Examiner disagrees and has rebutted above. Applicant submits “Johnson discloses mechanical coupling among resonators” and that “Since the dependent claims 3 and 10 contain all of the features of the respective base, and neither of the references cited disclose, teach, or suggest the independent claim features, Applicants respectfully submit that dependent claims 3 and 10 are allowable over the cited reference”, which the Examiner disagrees.

Johnson shows a most nearly identical structure to that of Zurn or Thompson et al. where a spring couples a first and second resonator. Johnson further teaches where the coupler is a capacitive element, such as shown in Zurn or Thompson et al., and where the capacitor is connected to ground (Fig. 8), where Johnson provides the advantageous benefit of providing bandwidth adjustment of the filter and where both Zurn and Thompson et al. show an equivalent circuit comprising shunt capacitance to ground, thus suggesting the obviousness of the substitution, thus the rejection is maintained.

#### ***Allowable Subject Matter***

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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May 10, 2005